lumellar groove; and the convergence of the anterior extremities, rendering the channel so much narrower than in *piperita*.

13. Cypræa nivea.—The shell described under that appellation by Gray, the original type of which, pierced with its two holes, is now before me, is a white variety of *Cypræa turdus*:—vide Gray's Monograph (Zool. Jour. i. 511). The figures, however, of *Cypræa nivea* of Gray, in Sowerby's Conch. Illus. and in Reeve's Conch. Iconica, are representations of the *Cypræa oryza* of Gray (Zool. Jour. iii. 369); this same error seems to pervade in the arrangement of most of the collections I have seen. The *Cypræa nivea* figured in Wood's Supplement to the Index Testaceol. is a young *Cyp. Humphreysii* of Gray.

14. Cypræa Producta.—I am able at length to refer conchologists to other specimens of this species than that described by me December 22, 1836, in these 'Proceedings,' which have been brought to this country by Capt. Sir Edward Belcher, and collected during the voyage of H.M.S. the Samarang. They are distributed into the cabinets of Miss Saul, Messrs. Cuming, Gaskoin, &c. The original shell, the type of this species, is well-represented in Sowerby's Conchological Illustrations, fig. 155; in Reeve's Conchologia Iconica, pl. 24, fig. 137; and in Kiener's Spécies Général, et Iconographie des Coquilles vivantes, fol. 53, figs. 5 and 5:—this last is copied from Sowerby.

June 27.—William Yarrell, Esq., V.P., in the Chair.

1. On the Habits of Cyclura lophoma, an Iguaniform Lizard. By P. H. Gosse.

The subject of the present paper seems to be as yet unknown to science; it may be thus described:—

Cyclura lophoma, mihi—(λόφος, a crest, and ὦμος, the shoulder). Shields on the muzzle separated by small scales; muzzle with four many-sided, convex, unkeeled plates on each side, the anterior and posterior very large, the intervening two smaller, short, but wide. General head-shields irregular in size, a largish one near the middle of the head; lower jaw with one (posteriorly two) series of large, rhomboidal, keeled plates, with none between them and the labial plates. Dorsal crest high, continuous over the shoulders, interrupted over the loins.

Length about 3 feet, of which the tail measures 21 inches. Colour (in a dried state) greenish-grey, with obscure blackish spots, confluent, so as to form a rude reticulation.

This very distinct species may be at once recognised by the number, form and arrangement of the plates of the muzzle, and particularly by the serrated crest not being interrupted over the shoulders. I have never met with it alive in Jamaica; the specimen from which the above description is taken, now in the British Museum, was one of many zoological treasures presented to me by my kind and valued friend, Richard Hill, Esq., of Spanish-town. It is to the same gentleman that I am indebted for the whole information, concerning the

economy of this Saurian, which I now submit to the Zoological Society.

The following memoir from the pen of my friend was communicated to me in the beginning of the year 1846; the animal, though spoken of by the name *Iguana*, is the identical specimen above described, and which Mr. Hill had noticed to differ from *I. tuberculata* by its lacking the dentelations on the gular pouch.

"Our Iguana is considered to be entirely herbivorous. It is found only in particular parts of the island. The low limestone chain of hills, along the shore from Kingston Harbour and Goat Island, on to its continuation in Vere, is its ordinary haunt; and it is not unfrequently taken in the plains between those sea-coast hills and the more inland mountains, being found in hollow trees in the pastures, where they congregate, several of them together.

"The labourers in clearing and burning off some of the savannas between Spanish-town and Passage-fort the other day (March 1844), surprised in a hollow bastard-cedar tree (*Guazuma ulmifolia*) some five Iguanas of the largest size. The one I sketched measured forty-five inches long, and it was said not to have been the largest. It was extremely fat and muscular. A russet-green, here and there graduating into slaty-blue, is the general colour of the body and limbs; some oblique lines of dark olive-green are traceable on the shoulders, and three broad dark triangular patches descend from the dentelations of the back down to the belly, with zigzag spots of dark olive-brown dispersed about. At very regular intervals, the tail is alternately of a lighter and darker olive-green. A bluish-green colour, more decided than on the body, prevails in the dentelations of the back, and on the legs. . . . . .

"Succulent herbs, growing in the forests of the limestone hills I have referred to, supply food for the Iguana. These hills, however, are so little suited for this sort of vegetation, that hardly anything more than aromatic and resinous trees and balsamic plants grow there. The lignum-vitæ (*Guaiacum*), the *Acacia nilotica*, and cactoid plants,—particularly the torch and melon thistles (*Cactus repandus* et *peruvianus*, et *Cactus melocactus*),—the *lantana*, and the *varronia*, with many balmy mallows (*Sida althæifolia, urens, capillaris*, et *viscosa*), and the vervain (*Stachytarpheta*), seem to comprise almost the whole catalogue of trees, shrubs and herbs. These hills are, however, inhabited by several domestic animals, which have run wild. Goats and hogs, derived from the common domestic breeds, have become feral; and even the common domestic poultry, cocks and hens, have taken to the woods as jungle-fowl, with the pintado. Quails and doves find here a safe breeding-place. These hills are also the special resort of the musteline thrush, the wood-thrush of the North Americans, which more than divides with the mocking-bird the credit of a songster. It has a louder and more brilliant note, though its song be greatly less varied and melodious. The fruit of the torch-thistle seems the great attraction of the wood-thrush, but it is not easy to perceive the resource of the granivorous birds. The aromatic herbs suit the wild goats; but the hogs can

find but few edible roots among rocks, but very thinly interspersed with soil. In the occasional hollows a little mould has been collected from decayed leaves, mingled with marl, extremely stony and sterile; and here a little more succulent herbage may prevail, and a few of the edible roots of the country may be found growing. The rocks have numerous caverns, and the springs that break out at the foot of the cliffs are an impure brackish water, though extremely transparent. Yet this district is almost exclusively the haunt of the Iguana. The occasional ones taken in the savannas are considered to be stray visitants from the neighbouring hills; they are not permanently established in the plains in which they are found.

"I have noticed the particular kind of locality which the Iguana inhabits in this part of the country, because it presents very different features from the haunts usually assigned to this lizard elsewhere. Forests on the banks of rivers, and woods around springs, where it passes its time in the trees and in the water, living on fruits, grains and leaves, are said to be the places in which the hunters find it on the American continent . . . . . ."

After referring to some notes of Sir R. Schomburgk made in Guiana, and to Goldsmith's graphic picture of noosing the Iguana, probably derived from Labat, which I do not here quote, because they refer to an animal *generically* distinct from ours,—my friend reverts to his own observations:—

"The gular pouch which hangs like the dewlap of a bull beneath its throat can be inflated*, but it is not exactly known under what circumstances, ordinarily, it has recourse to this power of inflation. When filled with air it would give breadth and buoyancy to the body, and if its habits are as aquatic as some accounts make them [those of *Iguana* proper] to be, it would afford to an herbivorous animal no unimportant aid while swimming and cropping 'its flowery food.' When excited it assumes a menacing attitude, and directs its eye to the object of attack with a peculiarly sinister look. At this time it inflates the throat, erects the crest and dentelations on the back, and opens the mouth, showing the line of those peculiarly-set white teeth, with serrated edges, so excellently made to illustrate the remains of the gigantic fossil *Iguanodon*. The principle of their construction is so precisely similar, as to leave no doubt of the genuine connexion of the extinct with the existing herbivorous lizard. The adaptation of both is for the cropping and cutting of vegetable food.

"In defending itself from attack, the Iguana converts its long flexible tail into no unimportant weapon. The dentelated upper edge, drawn rapidly over the body and limbs of an enemy, cuts like a saw. The twisted attitude which it assumes when approached is converted into a quick turn, in which movement the tail is nimbly struck by an overblow from one side to another, and then jerked

* I believe my friend has fallen into a common error here. If I may judge from analogy in the genera *Anolis* and *Dactyloa*, the gular pouch in the *Iguanidæ* is *extensible* but not *inflatable*, as I hope to show in a future paper on the habits of these genera.—P.H.G.

round. I have observed the same application of the tail to purposes of defence in the crocodile, and there can be little doubt that the dentelated crest upon this part of the body of lizards is for the infliction of serrated wounds. The lacerations which dogs suffer in attacking the Iguana are remarkably severe.

"There can be no doubt that the Iguana voluntarily takes to the water; but whether it delights to refresh itself in that element, as we should be led to suppose by the observation that it sports in it, I cannot learn from any of our people here. The one kept in the Zoological Gardens in the Regent's Park was seen to enter and cross a small pond, the fore-feet being motionless during the animal's progress through the water. It is curious, however, that whilst the dry, sterile hills near us abound with Iguanas, the banks of the Rio Cobre, a river so near its haunts, are scarcely ever visited by them."

After my arrival in England, the above notes coming under review, in my study of the Saurians I had brought home, I was induced to make further inquiry of Mr. Hill, whether in describing the inflation of the pouch, and the defensive action of the tail, he spoke from his own observation. From his reply I extract the following remarks :—

"..... The purposes of defence, to which I represented it as applying its long tail with its armature of pointed and triple-edged scuta, were suggested to me by the negroes, who were present when I was examining the specimen I mentioned as forty-five inches in length. They warned me to stand out of the reach of its tail, for they saw it was going to turn itself rapidly round to strike. I observed a peculiar sinister look it had, derived not from the eye being turned within the socket, so as to indicate the object it was regarding, but from the peculiar turn of the head, as if listening and observing. The negroes remarked that in the position in which its tail then lay, it was preparing to strike at me, and that dogs generally in setting upon them received desperate punishment, from the gashes and lacerations that were made into the thick muscles of the legs by the rapid flinging round of the Iguana in defending itself. The sudden jerk with which it drew back its tail was said to enable it to rasp the very flesh off the bone. The notion expressed about the inflation of the gular pouch was the consequence of seeing two very large Iguanas from Cuba, which distended this appendage, and let it collapse again. The skin of these animals hung about them, as if they *had been* fat, and were, at the time I saw them, emaciated .....

"An acquaintance has promised to supply me with notes of a pair of *Cycluras* that inhabited a hollow acacia-tree in his fields (*Prosopis juliflora*) for some sixteen months. He supposed them male and female. They differed in size and in tint; and were never, during the whole period of his acquaintance with them, seen on the outer tree both together. Like the pair of weather-indicators in the Dutchman's hygrometer, if one was out, the other was in. For a certain time every morning, one or other would be seen on some extreme eastern branch of the tree sunning itself, by basking at its length in the slant sunbeams that shot within the foliage. Their size and the nimble movement of the tail gave them so much the

appearance of the ring-tailed monkey, when climbing, that a near-sighted observer, like myself, would mistake them for some Sapajou scrambling up the bark."

The intelligence thus promised has just been communicated to me, contained in the following letter from Stephen Minot, Esq., of Worcester Lodge, to Richard Hill, Esq.

"February 1848.

"Dear Sir,—In accordance with your request, I send you a few particulars relative to the two Guanas that were seen during a period of nearly two years, at Worcester Lodge, in the parish of St. Catherine.

"About the beginning of September 1844, a friend of mine, riding into the property, observed, as he thought, a large green lizard basking in the sun on a hollow cashaw-tree (*Prosopis juliflora*), close by the road. He struck at it with his riding-whip, and immediately the animal disappeared with great swiftness into the tree. For several weeks after this it was occasionally seen, but was extremely shy, always disappearing the moment any one approached the tree. I gave orders that no one should, under any pretence, frighten it again, as a servant who had seen it informed me it was a Guana. By degrees it got tamer; and when I first saw it, it was, I should think, from 10 to 11 inches long, including the tail. About a year after this period it was always visible as soon as the sun became a little warm, clinging to the bark of the tree, or crouching (if I may use the term) along a small dry branch. I never saw it attempt to catch flies, or ants, or any insects; and the only time I ever detected it feeding was about this period. One day after heavy rain, the sun having broken through the clouds, shining very bright, it was then eating the guinea-hen-weed (*Petiveria*), growing about ten yards from the root of the cashaw. I watched it a few moments, unperceived, and observed it walk very slowly, moving one leg at a time, —cropping, and apparently swallowing without any further process, a mouthful of leaf; and leaving an indenture on the plant of the size of his mouth. Immediately on seeing me, by a succession of rapid springs, neither running nor walking, nor was it like the hopping of the frog, it regained the tree, and in a second was out of sight. The hollow part of the tree is about seven feet from the ground. It evidently did not object to the water, as there was a small lodgement of water close by where it was feeding, through which it bounded without a moment's hesitation, though it might have regained the tree, if it had disliked the water, by going round the small swamp, which was only say three or four yards in diameter. I mention this circumstance of the water, as we had previously had dreadful dry weather, and I often wondered how the animals of this description lived for want of it; and it was never visible during or immediately after rain.

"It was, as you are aware, foolishly shot, in my absence, by young N——, under the false impression that it ate chickens. I have spoken of it in the singular number, as we were not aware there were two, until Mr. N—— shot a second one on the same tree about